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MONTHLY NOTICES

OF THE

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A. A. COMMON, LL.D., F.R.S., Vice President, in the Chair.

Professor Henry C. Lord, Director of the Emerson McMillin Observatory, Ohio State University, Columbus, Ohio, U.S.A.,

was balloted for and duly elected a Fellow of the Society.

The following Candidate was proposed for election as a Fellow of the Society:—

William James Stewart Lockyer, M.A., Ph.D., 16 Penywern Road, South Kensington, S.W. (proposed by J. W. L. Glaisher).

Eighty-one presents were announced as having been received since the last meeting, including, amongst others:—

Cayley's Collected Mathematical Papers, vol. xii., presented by the Cambridge University Press; Cambridge Observatory, Astronomische Gesellschaft Catalogue, Zone +25° to +30°, presented by Sir R. S. Ball; S. Glasenapp, Mesures Micrométriques d'Etoiles Doubles, presented by the St. Petersburg Astronomical Observatory; Harvard Observatory Annals, vol. xxviii., part 1, and vol. xxxvi., presented by the Observatory; L. O. Hesse's Gesammelte Werke, presented by the Munich Academy; G. Müller, Photometrie der Gestirne, presented by the author; E. C. Pickering, Navigation in fog, presented by the author; E. J. Stone and H. H. Turner, Tables for facilitating computa-

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tion of star constants, presented by Professor Turner; C. A. Young, The Sun, new edition, presented by the author; Photographs of Spectra taken with the Bruce spectroscope, presented by Mr. Newall; Various volumes of MS., presented by Messrs. W. Wesley and Son.

Note on the Mean Motions of the Lunar Perigee and Node.

By Professor Ernest W. Brown, Sc.D.

The values given in my paper in the *Monthly Notices* 1897 March, for the mean motions of the perigee and node require slight corrections to make the comparison with Hansen's values complete. Although these corrections are much less than the possible errors which I thought it necessary to assign, and may be supposed to be included therein, there is a perceptible effect on the differences between the various results in the case of the perigee, and further my theoretical result for it comes much closer to that of Hansen. The nature of the correction is as follows:—

The disturbing function is of the form $m'Q$, where m' is the mass of the Sun and Q is a function of the solar and lunar coordinates. As is usual, we put $m'=n'^2a'^3$, instead of $m'=n'^2a'^3-E-M$, where n', a' are the solar mean motion and mean distance, and E, M, the masses of the Earth and Moon. Hansen uses the latter, which is the correct substitution for m'.

The correction is in general sufficiently accounted for if we multiply all the terms of the first order of the disturbing forces by

$$1-\frac{E+M}{m'}=1-\frac{1}{330000}, \text{ approximately;}$$

those of the second order by

$$\left(1-\frac{E+M}{m'}\right)^2=1-2\frac{E+M}{m'}, \text{ approximately.}$$

It is in all cases sufficient to consider the terms of the first order only in making this correction, except in the motion of the perigee, where the terms depending on the square of the disturbing forces are about equal in magnitude to those depending on the first power.

Hence, putting ϖ_1, θ_1 for the mean motions of the perigee and node, the corrections will be, with a sufficient approximation,

$$-\frac{1}{2}\varpi_1\cdot\frac{E+M}{m'}-\frac{1}{2}\varpi_1\cdot 2\frac{E+M}{m'}=-\frac{3}{2}\cdot\frac{1}{330000}\varpi_1,$$

and

$$-\theta_1\cdot\frac{E+M}{m'}=-\frac{1}{330000}\varpi_1,$$

respectively.

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